DOCUMENT RESUME

ED 336 014 HE 024 834

AUTHOR Otten, Chris M. E.
TITLE Designing a Study about Enrollment Motives. AIR 1991 Annual Forum Paper.
PUB DATE May 91
NOTE 22p.; Paper presented at the Annual Forum of the Association for Institutional Research (31st, San Francisco, CA, May 26-29, 1991).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Choice; Decision Making; Enrollment; Foreign Countries; Higher Education; Influences; Institutional Research; Intellectual Disciplines; Research Methodology; *Statistical Analysis; *Student Attitudes; *Student Motivation; *Student Recruitment
IDENTIFIERS *AIR Forum; Netherlands; *University of Utrecht (Netherlands)

ABSTRACT

This paper describes a quantitative method to investigate the enrollment motives of students, and reports on the application of the method at the University of Utrecht (The Netherlands). The paper discusses environmental, educational/organizational, and image factors influencing a student's choice of a particular university. A quantitative methodology is then proposed, which involves analyzing enrollment data in terms of total market share and relevant market share and determining a "recruitment index" for both the university as a whole and individual fields of study. Use of the methodology at the University of Utrecht is reported, comparing recruitment indices for biology, art history, philosophy, sociology, and social geography. Findings indicated that environmental factors were decisive for 60% of freshmen students and educational and organizational factors were decisive for 30% of freshmen. The usefulness and cost effectiveness of quantitative analysis in the design of an investigation of student enrollment motives is stressed. Includes nine references. (DB)

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Designing a study about enrollment motives

Chris M.E. Otten
Planning Officer

University of Utrecht
PO BOX 80125
3508 TC Utrecht
The Netherlands

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Paper presented at the 31th Annual Forum of the Association of Institutional Research, San Francisco, California, May 26-29, 1991.

HE 024 834

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This paper was presented at the Thirty-First Annual Forum of the Association for Institutional Research held at The Westin St. Francis, San Francisco, California, May 26-29, 1991. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

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Abstract

The paper is concerned with research into the actual motives of students to enroll at a particular university. Insight into these motives is important for recruitment and information policy as well as for the innovation of educational programs.

The paper describes a quantitative method which provides an objective comparison of the enrollment figures of different universities in such a way that the results can be used if one wants to investigate the enrollment motives of students.

The paper also presents the first results of a recent application of the method at the University of Utrecht.

1. Introduction

When leaving high school, students decide wether or not to enter university. If they do decide to go to a university, they are faced with two important questions: what field of study chosse and at which university. This paper is concerned with the second question and more in particular with the problem of how to find out about the reasons behind students' decisions whether they will or will not enroll at a particular university.

An often heard argument is that the good reputation of a university is one of the most decisive factors in deciding to enroll at a certain university. However, 'reputation' is too vague a concept to be useful from an operational point of view.
It is remarkable how little - at least in The Netherlands - is known about the actual enrollment motives of students. Insight into these motives is important for several reasons.
In the first place, there is the innovation of educational programs. In The Netherlands there is a tendency to develop new educational programs as alternatives for the more traditional fields of study. Insight into enrollment motives can contribute to the success of newly created educational programs for students.
Secondly, student information and recruitment policy can benefit from better knowledge of enrollment motives.

The growing interest in this topic in The Netherlands originates among others in the expected stabilization of student enrollment during the years to come (although an increasing number of people are sceptic about

'this already ten year old weather report').

For the University of Utrecht it can be added that there has been a steady decline in the market share of freshmen from 16% about ten years ago to 13% at the moment. This makes student enrollment an essential policy element for budget defense.

Another reason for the growing interest in enrollment motives arises from the striking differences in the enrollment succes of new fields of study.

An obvious way to find out about student enrollment motives would be to interview all freshmen, not only at the University of Utrecht but also at other universities. This method is not only very time-consuming, but surely also very expensive. An analysis of the enrollment figures in The Netherlands led to the conclusion that there might be a faster and cheeper way of tackling the problem of finding out about enrollment motives and more in particular about motives, related to the choice of university.

Paragraph 2 discusses the factors influencing the choice for a particular university. Paragraph 3 describes in detail the quantitative method mentioned above. In paragraph 4 we describe how the results of this method were used in setting up a research into enrollment motives, which was carried out at our university. The outcomes of this research are briefly considered in paragraph 5. The last paragraph of this paper contains some general conclusions.

2. Factors determining the choice of university

Until recently no comparative study had been carried out in The Netherlands among students of several universities to investigate their actual motives for enrolling at the university of their choice (Huis in 't Veld, 1990; Kodde and Ritzen, 1986). In other countries, especially the United States, there is more literature on this subject (Davis-Van Atta and carrier, 1986; Hossler, 1986; Gonzalez and Yorcey, 1983; Manski and Wise, 1983; Zamuto and Krakower, 1983; Zemsky and Oedel, 1983). Within the context of this paper, the study of Gonzalez and Young (1983) is particularly interesting. The purpose of their study was to find out what image students had of a certain university and why they had or had not actually enrolled at that university. The most important conclusion was formulated as follows:

> "Significant differences were discovered between students who were admitted and enrolled and those who were admitted and did not enroll, speaking tot a need to better inform prospective students about the university and to make modifications in the structure and policies of the university itself."

It may be concluded that a well designed research project can yield useful information about student enrollment motives as related to the university of their choice.

Van der Linde (1981) divides the factors influencing the choice for a particular university into three categories:

a. Environmental factors, such as distance from the place of residence before entering the university, the image of the city in which the university is situated, influences from family and friends, etc.

There is little a university can do to influence these environmental factors. Some, however, can be used in the university's information and public relations policy.

b. Educational and organizational factors, related to the organizational aspects and contents of the field of study.

c. Image factors, related to the image that students have of the university in question.

In paragraph 5 the role these factors play will be discussed more exctensively. For the moment the following observations suffice. For a majority of the students environmental factors play a crucial role in the process of choosing a university. But for a large group of students the other two categories mentioned above are also important and in many cases even decisive.

The question is when the first category is dominant and when that is the case for the other two categories. Trying to find the answer to this question was one of the objectives of a research project carried out at our university. The results of a quantitative method - to be discussed in paragraph 3 - analyzing enrollment data both at the level of the university as a whole as well as at the sub-university level turned out to be very useful in setting up the research project.

3. The quantitative method

3.1 Introduction

This paragraph describes a quantitative method for comparing and analyzing the enrollment achievements of universities. The method will be applied to the situation in The Netherlands, but the applicability of the method is of a much more general nature. In fact, it can be applied to any situation in which several universities have to compete with each other on a free student market.

The analysis is divided into two steps.
The first step analyses the enrollment data at the level of the university as a whole and defines the so-called recruitment index for the university. If a university has a higher recruitment index than another university, this means that the first university is more attractive for students than the latter one. Environmental factors are believed to play a crucial role in this respect.
The second step analyses the enrollment data at the sub-university level (faculties or fields of study). Again a recruitment index is defined, but this time for the sub-university level. Next, this index is corrected by relating it to the recruitment index of the university as a whole, giving rise to the so-called relative recruitment index for the sub-university level in question. The relative recruitment index is a measure for the attractiveness of a specific field of study if factors, not specifically related to the field of study in question, are eliminated. Educational and organizational factors are very important for differences in the relative recruitment index.

3.2 Analyses at the university level

3.2.1 The total market share

A very often used enrollment ratio is the total market share of a university, defined as the number of enrolled students for the university in question divided by the total number of enrolled students. Figure 1 at page 9 compares the enrollment of freshmen at the universities in The Netherlands over the last 15 years. From this figure it is evident that there are major differences in the enrollment of freshmen between the universities in The Netherlands.

The 'total market share', however, has some important shortcomings, differing from country to country. In the Dutch situation the most important reasons, why the market shars as such is not a very good ratio for analyzing enrollment data at the level of the university as a whole, are the following:

a. For some fields of study the enrollment of freshmen is restricted to a fixed number by the government (for instance medical and veterinary science, dentistry)[1].

b. In The Netherlands there is no completely free competition between the universities, because the government decides which sectors of education are allowed at a certain university. For instance, at the Catholic University of Brabant (KUB) a student can only choose from social sciences, economy and law. Generally speaking, no university in The Netherlands provides education in every field of study.

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[1] The law on higher education in The Netherlands gives the government the authority to do this, because the government is the most important funding agency of the universities.

3.2.2. Relevant market share

Whatever the reasons for the inadequacy of the total market share in analyzing the enrollment data at the level of the university as a whole, these reasons have to be taken into account in one way ar another. For the situation in The Netherlands this is done by applying the following corrections.

a. Fields of study for which enrollment is restricted to a fixed number are disregarded.

b. Fields of study, taught at only one or two universities, are also disregarded.

c. For every university the 'relevant' market is defined, consisting of those fields of study, which are taught at the university in question, minus the disregarded fields of study as mentioned at the points a and b above. The so-called relevant market share is defined as the ratio of the number of students enrolling in the above mentioned relevant fields of study at the university in question and the total number of students enrolling in these fields of study.

Figure 2 at page 9 gives for the universities in The Netherlands the relevant market share for freshmen over the last 15 years. Comparing figures 1 and 2, the following conclusions can be drawn:

(i) The relevant market share can be much greater than the total market share, because some universities have only a few fields of study.

(ii) The in- or decrease can be very different for the two market shares. The main reason for this is that the in- or decrease in enrollment can differ significantly between the various fields of study. For instance, the increase in the number of freshmen enrol-

ling in economy and business administration was much above average. This is the reason why the absolute market share of the University of Utrecht (RUU) has dropped considerably over the last 10 to 15 years, whereas the relevant market share remained more or less the same. For the same reason the absolute market share of the Erasmus University of Rotterdam (EUR) almost doubled, whereas their relevant market share hardly increased.

3.2.3 Recruitment index

The relevant market share gives a clear insight into the enrollment achievements of universities as a whole. However, this insight can only be gained by comparing the relative market share of the university in question with that of its main competitors. Therefore the so-called recruitment index is introduced. It is defined as follows.

a. For every (relevant) field of study 'f' the total number N_f of universities a student can choose from is counted. The proportional market share M_p^f for this field of study is then defined as:

$M_p^f = 1/N_f$.

b. The proportional marketshare M_p^u for the university 'u' as a whole is equal to the weighted average of the proportional market shares of all relevant fields of study at the university in question:

$M_p^u = \Sigma_f M_p^f \times W_f / \Sigma_f W_f$,

where the weight W_f for field of study 'f' is equal to the total number of freshmen for this field of study at all universities involved.

c. The recruitment index R_u is defined as the ratio of the relevant market share M_r^u and the proportional market share M_p^u:

$R_u = M_r^u / M_p^u$

Fig.1: total market share

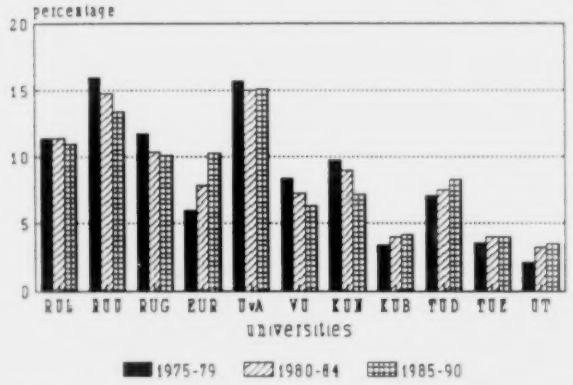


Fig.2: relevant market share

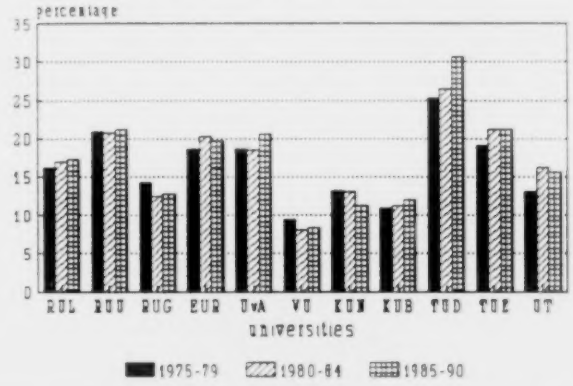
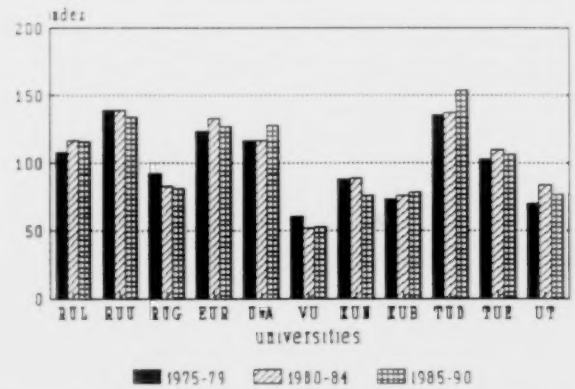


Fig.3: recruitment index



The recruitment index indicates how much the number of students (and the relevant market share) is larger or smaller if compared with the (hypothetical) situation that the market share of every university involved would be equal to the proportional market share. Figure 3 at page 9 shows the development of the recruitment indices of the universities in The Netherlands over the last 15 years.

The definition of the recruitment index is illustrated by an example of a university with two fields of study X and Y. The market share of X is 10% and that of Y is 15%. For X a student can choose from 8 universities, for Y from 4. The total number of fresmen at all universities involved is 500 for X and 1000 for Y.

The proportional market share for X equals 12.5% and for Y it is equal to 25%. The proportional market share for the university as a whole equals:

(12.5% x 500 + 25% x 1000)/(500 +1000) = 20.8%

The relevant market share equals:

(10% x 500 + 15% x 1000)/(500 +1000) = 13.3%

This yields for the recruitment index a value of: 13.3/20.8 x 100 = 64.

3.3 Analyses at the sub-university level

Analyzing enrollment data at sub-university level very often gives rise to questions whether a certain trend is caused by factors, attributed to the university as a whole or whether its cause is more specifically related to the field of study in question. Factors, attributed to the university as a whole, should effect the enrollement in all fields of study in more or less the same way.

In this paragraph the so-called relative recruitment index is introduced. This index is very useful in trying to identify factors specific to a

certain field of study and is defined as follows.

a. Firstly, it is assumed that the recruitment index of the university is a good measure for the attractiveness of the university as a whole and that its value is mainly determined by what has been called environmental factors in paragraph 2.

b. For a field of study 'f' we define a recruitment index R_f as the ratio of the market share M_f and the proportional market share M_p^f:

$R_f = M_f / M_p^f$

c. Next, the so-called relative recruitment index I_f for field of study 'f' is defined as the ratio of the recruitment index R_f for the field of study in question and the recruitment index R_u of the university as a whole:

$I_f = R_f / R_u$.

The relative recruitment index is a measure for the attractiveness of a specific field of study if factors, not specifically related to the field of study in question, are eliminated. An index larger than 100 indicates that the particular field of study is more attractive to students than the average field of study at the university in question.
The figures 4-8 on pages 12 and 13 show the relative recruitment indices for five fields of study.

To illustrate the above definition, the relative recruitment indices for the fields of study X and Y from the example in paragraph 3.2.3 are calculated. For field of study X, the recruitment index is equal to (10%/12.5%) x 100 = 80. This yields the following value for the relative recruitment index: I_x = (80/64) x 100 = 125. In the same way the relative recruitment index for field of study Y can be calculated to be 94.

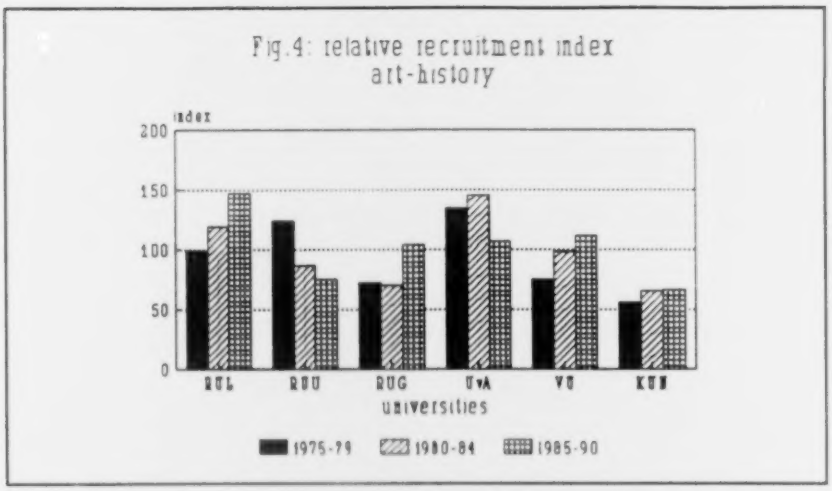


Fig.4: relative recruitment index
art-history
index
200
150
100
50
0
RUL
RUU
RUG
UvA
VU
KUN
universities
1975-79
1980-84
1985-90

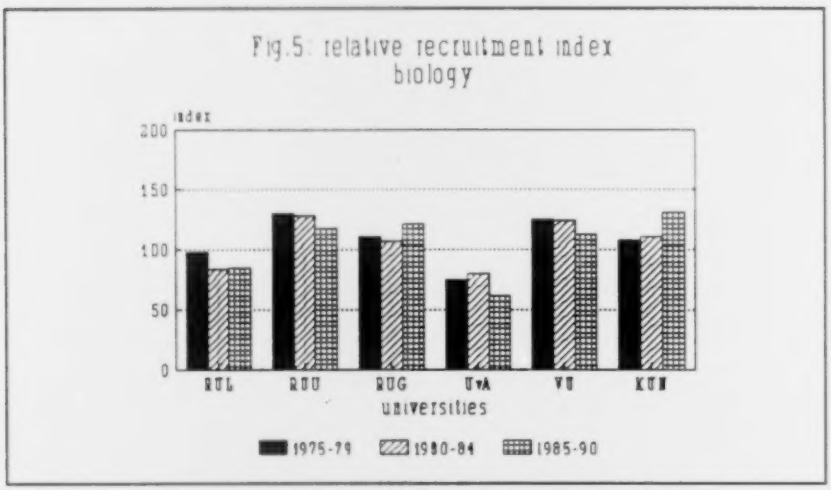


Fig.5: relative recruitment index
biology
index
200
150
100
50
0
RUL
RUU
RUG
UvA
VU
KUN
universities
1975-79
1980-84
1985-90

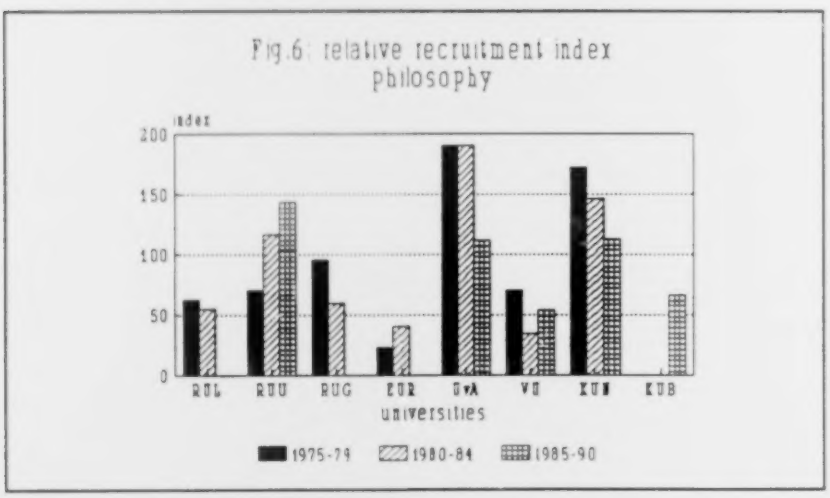


Fig.6: relative recruitment index
philosophy
index
200
150
100
50
0
RUL
RUU
RUG
EUR
UvA
VU
KUN
KUB
universities
1975-79
1980-84
1985-90

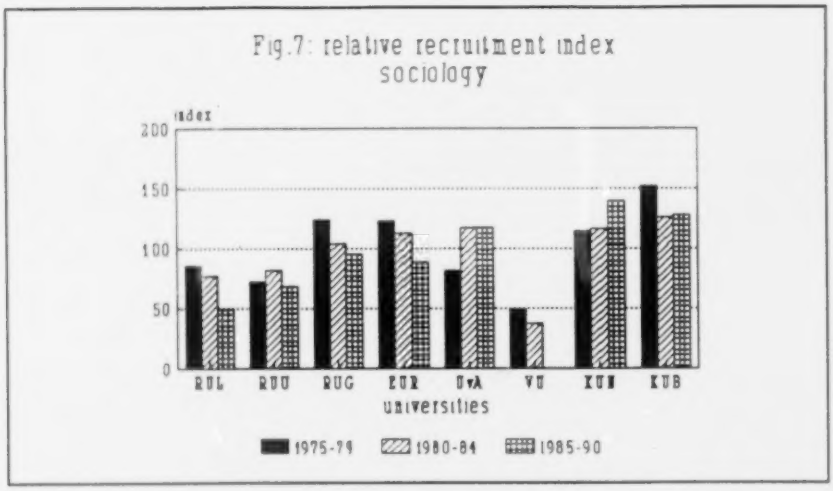


Fig.7: relative recruitment index
sociology
index
200
150
100
50
0
RUL
RUU
RUG
EUR
UvA
VU
KUN
KUB
universities
1975-79
1980-84
1985-90

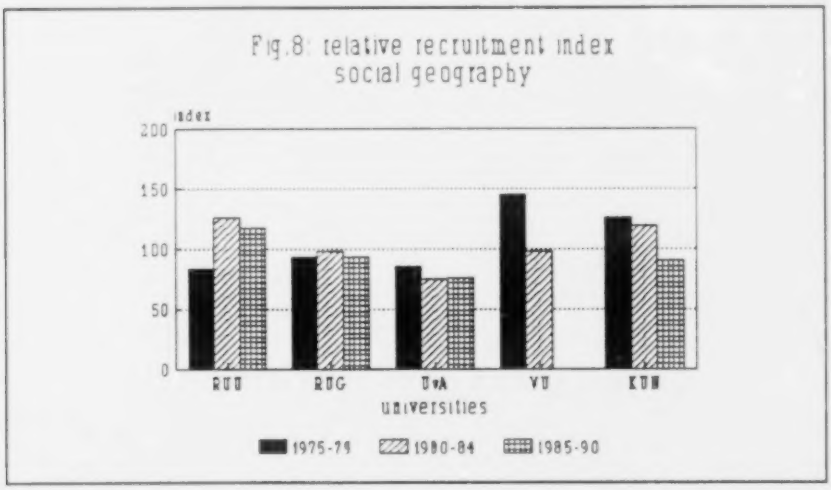


Fig.8: relative recruitment index
social geography
index
200
150
100
50
0
RUU
RUG
UvA
VU
KUN
universities
1975-79
1980-84
1985-90

4. Application

The results of the quantitative analysis as outlined in paragraph 3 have recently been used in a market research (Huis in 't Veld, 1990) at the University of Utrecht. This research aimed at answering the following questions:

a. How can the university make a better use of the potential of prospective students ?

b. By what means can the information, given to prospective students, be improved ?

Part of the research consisted of an inquiry among freshmen in the fall of 1989. The aim of this inquiry was to gather information about several items, such as: the place of residence before entering the university, the motives for choosing a particular university and the needs for information about the university and the opportunities for studying.

From an analysis of the regional spreading of pre-enrollment places of residence it can be inferred that the University of Leiden (RUL), the Municipal University of Amsterdam (UvA) and the Catholic University of Nijmegen (KUN) are the main competitors for the University of Utrecht. So, it was decided to restrict the inquiry to freshmen from these four universities[2].

Furthermore, it was assumed that the results of the enrollment analysis as outlined in paragraph 3 could be useful in setting up the research project. And indeed they were, for the quantitative results of the analysis showes that different fields of study can have very different

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[2] Unfortunately, the Catholic University of Nijmegen refused to cooperate, so it was impossible to interview the students of this university.

relative recruitment indices. It was therefore decided to interview only students from the five fields of study, whose relative recruitment indices are shown in figures 4-8 at the end of paragraph 3: i.e.: biology, art-history, philosophy, sociology and social geography.
For biology, social geography and philosophy the relative recruitment index at the University of Utrecht is larger than for the university as a whole; for art-history and sociolgy the situation is the other way around.
Moreover, for each one of these five fields of study the relative recruitment indices differ significantly between the universities considered.
All these factors justify the conclusion that an inquiry among freshmen from these five fields of study might yield relevant information about student enrollment motives in a faster and more efficient way than by interviewing students ad random.

5. Results

This paragraph gives a resumé of the first results of the market research, described in the previous paragraph. Moreover, the question is considered whether these results indicate that the conclusions, drawn from the quantitative analysis as described in paragraph 3, were indeed useful in setting up the inquiry.

The choice for a particular university is to a large extend based upon factors which are difficult to influence. In paragraph 2 these factors were refered to as 'environmental' and the inquiry showed that about 60%

of the students mentioned these factors as being decisive for their choice of university. Almost 30% of the students mentioned 'educational and organizational' factors as decisive for their choice of university. The place of residence before entering the university clearly influences the students' motives for choosing a particular university. Students from the traditional recruitment area's refer more often to 'environmental' factors. Students from area's where there is a strong competition between several universities refer more often to the 'educational and organizational' factors.

There is, of course, no hard evidence that the results as described above would not have been obtained or only at much greater costs, if the students had been picked ad random and not from the five selected fields of study. However, there is a strong correlation between a high score on the 'educational and organizational' factors and a large relative recruitment index, as is shown in the table below.

	Score on 'educational and organizational' factors	High (+) or Low (-) recruitment index
Biology	45%	+
Social geography	32%	+
Philosophy	21%	+
Art-history	17%	-
Sociology	7%	-

6. Conclusions

The main conclusions that can be drawn from the application of the method, described in paragraph 3, to the available enrollment data of the universities in The Netherlands are:

a. The results of the quantitative analysis were very usefull in the design of an investigation of student enrollment motives.

b. The outcome of the investigation showed that interesting results can be obtained in a probably much cheeper and faster way than without the use of the quantitative analysis of enrollment data.

Further investigations - not discussed in this paper - show, that the quantitaive method can also be used if one wants to investigate other factors determining enrollment achievements, such as:

- Differences between enrollment of male and female students.
- Migration of students between institutions of higher education.

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